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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of

M. ANTHONY STONE, et. al

for: HONEYCOMB REMOVAL

Serial No.: 08/327,744

Filed: Oct. 24, 1994

)  
Examiner: C. Goodman  
)  
Group Art Unit: 3724  
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)  
)  
(Our Docket No.: 3309P-65)  
)

DECLARATION OF CLIFFORD V. MITCHELL

37 CFR 1.132

I, Clifford V. Mitchell, one of the named inventors on the above cited patent application, hereby state the following:

1. I am employed at Pratt & Whitney Advanced Systems Technologies, Inc., (AST) Huntsville, Alabama. I have been employed by AST (formerly Waterjet Systems, Inc. and USBI) for approx. 12 years. My present position is Manager, Huntsville Service Center & Process Engineering. I have 12 years experience in ultra-high pressure water application engineering and 20 years experience in Gas Turbine Engine refurbishment.

2. Honeycomb is a formed metal structure braze bonded to a metal substrate. Plasma/sintered coatings are sprayed powders layered to a metal substrate. The honeycomb material and braze described in the present application has a much higher erosion characteristic than the plasma sprayed and sintered coatings described in U.S.



patent no. 5,167,721 to McComas. Therefore, the methods typically employed to remove sprayed and sintered coatings such as plasma, rubber, fibermetal and epoxy materials from base materials such as nickel, steel, titanium, and aluminum are not generally applicable to honeycomb removal.

3. Prior to the introduction of high pressure liquid processes, sprayed and sintered coatings were typically removed either by a chemical strip or grit blasting; honeycomb was typically removed by grinding and/or a chisel.

4. Two years of initial work on the present invention demonstrated only a limited capability of ultra-high pressure water to remove honeycomb. Removal rates were unacceptably low (.005 ips at 55,000 psi) and honeycomb in wicked areas and the braze were not removed at all.

5. Only after extensive further experimentation with the present method were increased removal rates for honeycomb and braze demonstrated.

6. Engine overhaul and repair customers have expressed a long felt need for a honeycomb removal process that does not damage the substrate. Present machining techniques to remove honeycomb result in an unacceptably high scrap rate.

I declare that all statements herein made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 USC 1001) and may jeopardize the validity of the application or any patent issuing thereon.

  
Clifford V. Mitchell

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